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PAM* *Hyndman, P.K.*
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T
**INVERNESS RAILWAY,
CAPE BRETON.**

REPORT

TO

H. N. PAINT, Esq., Ex-M. P.

CONTROLLING THE

Broad Cove Coal Mines

OF THE

Exploratory and Preliminary Surveys

FROM

Orangedale Station, C. B. R'y,

—TO—

Broad Cove and Cheticamp,

TOGETHER WITH

*A Description of the Country, and of the Inverness and
Richmond Railway Co's Line; A Comparison of
the Routes, and Remarks on the Best
System of Railway Lines calculated
to open up, in the shortest
time, the*

**AGRICULTURAL AND MINERAL RESOURCES
OF NORTHERN CAPE BRETON.**

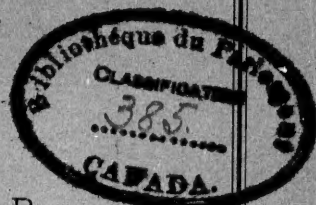
By P. K. HYNDMAN,

Memb. Inst. C.E., Memb. Can. Soc. C.E.

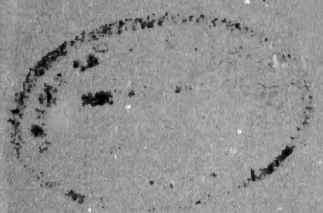
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March, 1890.



RAIL



THE
RAIL
WAY
COMPANY
OF
ENGLAND
AND
WALES
LIMITED
LONDON

THE
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WAY
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OF
ENGLAND
AND
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LIMITED
LONDON

RAILWAYS

IN

Inverness, Cape Breton.

OTTAWA. 8th MARCH, 1890.

To
HENRY N. PAINT, Esq., Ex-M.P.

PORT HAWKESBURY, CAPE BRETON.

SIR:—

RESOURCES AND REQUIREMENTS OF NORTHERN CAPE BRETON.

It has long been urged that the northern peninsula of the Island of Cape Breton should be furnished with railway communication. It is the most compact, as well as the best agricultural portion of the Island, but it is the most deficient in safe harbours. This peninsula is made up of the northern half of the County of Inverness, and the larger part of the County of Victoria. In addition to agricultural resources, the mineral wealth of this region is very considerable, but, chiefly from the want of harbours and of railways, this latter source of prosperity remains, to this day, entirely undeveloped.

2. The County of Inverness is the more important of the two, because it contains the greater area of culturable land, and of minerals. It possesses only one safe harbour, on the Gulf of St. Lawrence north of the Straits of Canso, Cheticamp, and also Whycocomagh, on the waters of the Bras D'Or. Port Hawkesbury and Port Hastings are the two harbours on the Straits of Canso, which themselves may be called a harbour. Port Hood is only safe in fine weather, and Mabou and Margaree are obstructed by bars at their entrances. The County of Victoria, on the other hand, while having a less extensive agricultural area, and no coal, though there are other minerals, has good harbours on the East coast such as Ingonish and St. Ann's, and also Baddeck, on the Bras D'Or lake, a port more favourably situated than Whycocomagh. Middle River is the best farming district in Victoria, and Mabou and Margaree in Northern Inverness. The most important mineral is coal, of the bituminous variety. This is entirely confined to the Gulf coast of Inverness. There are four known Fields where coal has been found and mined to a small extent, viz.—Port Hood, Cape Mabou, Broad Cove and Chimney Corner. As far as is known at the present time, it appears that the Broad Cove Coal Field is the most promising, on

Non-develop-
ment of Agricul-
tural and Mineral
wealth due to
want of railway
communication.

Harbours, coal
fields, and farm-
ing districts of
Inverness and
Victoria.

account of both quality and quantity of coal, facility of mining and accessibility, the others being of small prospective value, both in quantity and quality.

Broad Cove coal field.—Official report. Difficulties in shipping.

3. The Inspector of Mines for Nova Scotia, Mr. E. Gilpin, F.G.S., has made a report, at your request, of the Broad Cove Coal Field. In this report he estimates a possible quantity of Two Hundred Million Tons! An attempt was made to ship coal at one of the "headings," into small vessels, by means of a short railway and scows. Broad Cove is a long straight stretch of sandy beach, completely exposed to the Gulf storms. A stream, called "Big River," winds in a flat meadow, till it reaches the beach, which has blocked up its mouth and turned it aside to find an outlet, as best it may, towards the north. Across this beach, a trestle-work was erected, (which is still standing) upon which a railway was laid, for the conveyance of trucks to load the coal directly into vessels or scows on the shore, where the scows could not be brought into the river inside the beach. In this way, in four months, a quantity of 6,000 tons was mined and shipped, but the difficulties were such that this could not be continued.

Remaining coal mines at Port Hood, Cape Mabou, and Chimney Corner.

4. The Coal Mine at Port Hood was worked at one time, but has been abandoned partly on account of the difficulties in shipping, and partly because of the poor quality of coal and the expense of working. The coal is said to contain a large proportion of sulphur, and one seam only is known of a thickness of six feet. In 1869 a steamer took a load of coal from Port Hood to Toronto. It lay on the wharf and bleached, and for some years coal from the Maritime Provinces was not held in high estimation. The prospects of any considerable yield of coal at Cape Mabou are very small. At Chimney Corner there is only one four foot seam. At Broad Cove there is an aggregate thickness of thirty-six feet of seams, one of which is 14 feet thick and another 7 feet.

General description of the agricultural districts and list of other minerals to be found in Inverness and Victoria

5. The agricultural resources and capabilities of this part of Cape Breton are very considerable. It is the best part of the Island in this respect. The country is diversified by hill and dale, extensive meadows and fertile uplands. Besides the hay and pasture that these afford, the soil is generally rich, and capable of producing fine grain and root crops. The extensive table-lands of the "Mabou Highlands" at an elevation of about 1,000 feet above the sea, are well cultivated. The rolling hills and valleys, which on three sides surround Mabou, contain also numerous farms. There is Skye Glen, a wide valley of meadow, with fine slopes on the hillsides; Strath Lorne; the valley of Big River, having a wide stretch of meadow and farm lands. The Margaree district, in which may be included the valleys of both the South-western and North-eastern branches, as well as that of the main river to the sea, is one continuous meadow from $\frac{1}{4}$ to 1 mile in width, flanked on each side by sloping hillsides and large expanses of more level ground. The

Island Exhibition, held at Mabou in October last, was admitted to be deficient in quantity, in the way of agricultural produce, as compared with former years. But the samples, especially of the different kinds of grain and root crops, showed the soil was capable of raising the best. The show of cattle and horses was very good. As regards minerals, other than coal, I cannot do better than give a list from Mr. Gilpin's paper read before the Nova Scotian Institute of Natural Science January 14th, 1889.

GYPSUM, chiefly in Victoria.

SALT, associated with Gypsum.

MINERAL SPRINGS, between Baddeck and Whycocomagh.

IRON ORE, in the Coal measures.

LIMESTONE, everywhere.

SILVER AND LEAD, South-west Margaree, Middle River and Port Hood.

COPPER, Whycocomagh, Cheticamp.

BUILDING STONE, Margaree, Broad Cove, Cheticamp, Mabou, Whycocomagh.

OIL, Lake Ainslie (*doubtful*).

There is an Iron mine at the head of Whycocomagh Bay. There is said to be Gold up the valley of the North-east Margaree. Timber, of which a great deal yet remains, and the Fishing Grounds, which are very valuable from the remaining sources of wealth of Northern Cape Breton.

6. To most speedily develop these resources, a railway from the Broad Cove Coal Mines to the nearest Shipping Port (Whycocomagh) and Station on the Cape Breton Railway (Orangedale,) is required to open up the Mines, whereby, besides the direct advantage to be gained from this source of wealth, a large mining population will be collected and a local market for agricultural produce be created. In addition, the railway will give an outlet for all other and surplus produce and provide access to more distant and better markets. This will be the first—and a great step—towards the development of the country. And it will be shown to be an easy, and the easiest step. An extension of the railway to Cheticamp and other parts of this portion of Cape Breton will follow, together with improvements to those harbours which are capable of it.

The best means of development, a railway from Orangedale to Broad Cove Mines.

THE INVERNESS AND RICHMOND RAILWAY.

7. Shortly after the selection of the route for the Cape Breton Railway, a Company, chiefly of American capitalists, was chartered by the Provincial Government, as the Inverness and Richmond Railway Company, to survey and construct a line of railway between Cariboo Cove, near the southern end of the Straits of Canso, and the harbour of

Preliminary survey from Port Hawkesbury via Port Hood to Margaree Harbor.

Cheticamp in the North, via Port Hood, Mabou, Broad Cove and Margaree. The object in view was, it has been stated, to reach the four coal fields already mentioned, besides one in Richmond, with terminal harbours at Cheticamp and Cariboo Cove, the latter being generally, if not always, free from ice in all winters, and coal could, therefore, be shipped from there all the year round. A preliminary survey was made by this company in the summer of 1887. It commenced at the Cape Breton Railway, about two miles from Point Tupper, (the portion south to Cariboo Cove having, apparently, been left in abeyance,) and followed the shore of the straits, past Ports Hawkesbury and Hastings, and the Gulf Coast as far as Port Hood. Here it left the coast and passing into the valley of the South-west Mabou River, crossed the East Mabou River near the mouth of Glendyer Brook, the valley of which it ascended, till it crossed the summit and descended to Lake Ainslie by Black River. Thence it passed down, northerly into the valley of Big River, but left it again before reaching the Broad Cove Mines, and followed very closely the line of country traversed by the present Post Road, by Broad Cove Marsh, to South-west Margaree. Thence, after crossing the South-west Margaree River, it reached Margaree Forks, and crossing the North-east branch, it kept the right bank of the main river to its mouth, opposite the village of Margaree Harbour, where the survey terminated, a total distance of about 85 miles.

Negotiations for aid from Government and Municipality. Estimate of cost.

8. Plans of this survey were prepared and submitted to the Dominion Parliament with a view to obtain a subsidy. An additional reason for this subsidy was urged, that the Dominion Government would be saved the expenditure of about three-fourths of a million dollars for harbours and piers along the coast. A short report was submitted, from the Engineer, in which it was stated that the line would cost, as based on the levels of the survey, \$40,000 per mile. The lengths of seven of the principal trestles and bridges were also given, aggregating 2,400 feet, at an estimated total cost of \$31,500. It was subsequently made known that a mistake had been made in the estimate, which should have been \$20,000 per mile. No details, upon which the estimate might have been based, appear to have been furnished. The Charter included the construction of a "branch" from a point where the line touched Lake Ainslie, to Whycocomagh. No survey has been made by the company of this branch. Owing to non-compliance with the necessary conditions a Dominion Government subsidy was not granted.

A new Company commence construction, having obtained, on conditions, a county bonus of \$100,000

9. There subsequently appears to have been some disorganization and reconstruction of this Company. The representatives of the new Corporation applied to the Municipal Council of Inverness, at its annual meeting in January 1889, for a "Bonus." At a special meeting of Council in May last, a resolution was passed granting a Bonus of

\$100,000 on condition of the acceptance by the Provincial Government of the necessary security for the grant of a subsidy. The line was to begin at Port Hastings, and to be constructed to Broad Cove, and if not extended to Cheticamp, the half of the Bonus (which could all be drawn by that time) was to remain as the first lien on the Company's property. During last summer, construction was commenced at Port Hastings, and carried on over about 15 miles along the Coast, the work being limited to banks and cuttings, and the Line being "located," apparently, a little in advance of the earthworks, beyond which, it is supposed, no further "location" has been made. The original Company appear to have obtained a grant for the "Right of Way," from the Municipality, whether with or without conditions is not known. Neither the first nor the second Corporation have succeeded in obtaining a subsidy from either Dominion or Provincial Governments. The Municipality appointed an Appraiser, who valued property as it was entered on by the constructors. The work has been stopped since the beginning of winter.

10. That portion of the line between Port Hawkesbury and Hastings will be very costly, if carried along, or near the water's edge. A proposal has been made to take a line at the back of Port Hawkesbury, but, besides being impracticable from the nature of the ground, its situation would be inconvenient. Two trestles, 800 feet and 1000 feet long are estimated at \$18,000. A junction would have to be effected with the Cape Breton Railway, by curving round the head of Ship Harbour. The difficulties over this portion have, so far, had the effect of the company not taking up this part of the line, with the apparent intention of making Port Hastings the Terminal Shipping Port on the Straits of Canso, and depending upon a Ferry Service to making a connection with the Intercolonial Railway across the Straits at Port Mulgrave. As compared with Ship Harbour, (Port Hawkesbury,) the accommodation at Port Hastings for loading and unloading is very small. The triangular Ferry Service existing at present across the Straits will be discontinued on the opening of the Cape Breton Railway which will carry all but the mail to the North. This, with more benefit to the public, can be brought on from Port Hastings to Point Tupper and cross with the other mails.

Description and difficulties of the line between Port Hawkesbury and Port Hastings.

11. From Port Hastings north, along the coast, the construction may prove of a moderately easy nature, though protection will be needed in places, from the sea. There is, however, only a very narrow strip of country between the shore and the foot of the Craguish Hills, where they do not run down directly to it. There is some fishing, but little agriculture. Twenty miles farther to the north, the country widens out more. Port Hood, the county town is about 30 miles from Port Hastings. Here, at one time there was a fine harbour, which was destroyed,

Port Hastings to Port Hood.

partly by storms making a breach through the low isthmus connecting Port Hood Island with the mainland, and partly by fishermen hauling their boats through it. Subsequent neglect has made its repair almost an impossibility from the probable great cost. Still, in fine weather, steamers and other vessels call there during the season of navigation.

Port Hood to
Lake Ainslee.

12. It has been proposed, instead of crossing into the valley of the South-west Mabou River, to continue the Line along the shore to the mouth of Mabou Harbour, crossing it there, and turning inland, for a mile or two, to follow the valley of the North-east Mabou river to its head, passing by Black Glen, into the valley of Black River, there re-joining the Survey Line. This proposal indicates that unfavourable ground has been met with on the line, after leaving Port Hood. This is due principally, to the great differences in height of the ridges and valleys which have to be crossed. No survey of this proposed alternative line has been made, and, therefore, no conclusion can be come to as to its practicability. It would approach nearer to the Coal Mine at Cape Mabou.

Lake Ainslee via
Broad Cove
Marsh to S. W.
Margaree.

13. At the mouth of Black River, about 51 miles from Port Hawkesbury, the line reached Lake Ainslie. It is from this point that the "branch" line to Whycomagh is to start. The Line was continued northerly to the end of the Lake, and then passed down into the valley of Big River, as before stated. This portion is common to both Surveys; to this one, and that for the Orangedale Line to be described farther on. It is from where the line leaves the valley of Big River to South-west Margaree that the greatest difficulty in the Route occurs. The distance by road is about 12 miles. About half way to Broad Cove Marsh the face of the mountain has to be followed. This is intersected by deep valleys and gorges, stretching far inland, necessitating a circuitous alignment and heavy earthworks. From Broad Cove Marsh to South-west Margaree, the line would be more direct, and probably lighter in character, but the gradients would be undulating and steep, and the summit would have to be crossed at a considerable elevation above the Sea. It will probably require more surveys before it can be decided whether a practicable line can be obtained along this Route or not. The remainder of the country from South-west Margaree to Margaree Harbour and Cheticamp will be described farther on.

"TERMINAL CITY" PROJECT.

Character and
aims of the en-
terprise.

14. In connection with Cariboo Cove as a winter harbour, it is necessary, in this report, to allude to an enterprise started by some American capitalists a short time ago. Their association is known as the "Terminal City" Co. or some such name, and their intention is to establish two harbours, one on each side of the Straits of Canso, at its southern extremity, these being supposed to be always free from ice.

The one on the mainland of Nova Scotia is to be connected with the Intercolonial or other railway system, and a line has been surveyed from Port Mulgrave along the shore to this point, which, it is designed, is to be the Great Eastern Shipping Port of North America for Transatlantic traffic. The purpose of the harbour at Cariboo Cove is that Transatlantic steamships may be able to take their coal there, to be conveyed, at any rate during the winter, by railway from the different coal mines in the Island. A line for a railway has been surveyed by this Company from Cariboo Cove northerly to some point on the Cape Breton Railway about three miles east from the Straits of Canso, and it has also purchased a large extent of land round the Cove, and in the neighborhood of the Richmond Coal Mines.

ORANGEDALE TO BROAD COVE.

15. Having become part proprietor of the Broad Cove Coal Field as far back as 1869, and having lately obtained control of the principal part of these Coal Areas, and also possessing a Charter from the Provincial Government (known as the Inverness and Victoria Railway Charter, to survey and construct a line of railway from Orangedale on the Cape Breton Railway, via Whycocomagh, to Broad Cove and Cheticamp, you made arrangements last summer for the necessary Instrumental Survey. No survey had previously been made from Orangedale to the head of Whycocomagh Bay, about four or five miles, but from this north along the route now intended to be followed, a survey had been made by Mr. W. H. Tremaine, C. E., in 1875, for the Provincial Government, from Broad Cove or somewhere near the Mines, (half a mile from and 140 feet above the Sea) via Whycocomagh, to the Straits of Canso.

16. The Survey carried out last summer has been an exhaustive one, as it embraces some alternative portions as well as a set of cross levels, from which can be closely determined the best position for the final location. The route followed is from Orangedale Station on the Cape Breton Railway to the head of Whycocomagh Bay, thence keeping near the water's edge to the Indian settlement near Whycocomagh, and continuing north, crossing Skye River a little above that village, the line will be close to its left, or east bank, all the way through Skye Glen. About the 16th mile the line turns to the right, up the gorge of McQuarrie's Brook, which it follows for about a mile, and thence running easterly and northerly it reaches the head of Hay River valley, which it follows to the shores of Lake Ainslie about the 23rd mile. The Lake shore is followed round the foot of Mount Young and past the mouth of Black River to its extreme north end, which is known as Loch Ban, near the 29th mile. Thence, through a depression in the Lake Basin, it passes down into the valley of Big River, and entering the gorge of the river near the 23rd mile, it continues along the side of the steep bank to near the Sea shore, where it crosses the stream, a total distance of nearly 34 miles.

General description of the route followed.

Character of the
work from
Orangedale to
the Summit, 17
miles.

17. Between Orangedale and the head of Whycocomagh bay, a ridge 100 feet above the Sea Level has to be crossed. The gradients will be, in two or three places, from 50 to 70 feet to the mile. There are some cuttings and banks, one cutting being 20 feet deep for some distance. With one exception this is the deepest. There will be only three or four small bridges, besides eight or ten small culverts in this distance of about four miles. Beyond this along the head of the Bay, there may be a little rock, and some protection will be required, as the line, in one or two places, will be partly in the water. Up to the 8th mile the line will be nearly level. The bridging will be, if anything, less than in the first four miles. At the 8th mile Skye River will be crossed. This will be the largest structure on the Line. The span for the main channel will require to be 100 feet, and some extra water way should be left, to pass the spring floods. From this on to Indian Rear $1\frac{1}{2}$ miles farther, the work will be light, (except for some little protection, in places, from the river) and the rise about 25 feet to the mile. One or two culverts will be required. From Indian Rear to McQuarrie's Brook, $6\frac{1}{2}$ miles farther on, the average rise will be about 16 feet to the mile, with very little earthwork and a few small bridges. Through McQuarrie's gorge, a maximum gradient of 80 feet to the mile will be necessary for about $1\frac{1}{8}$ miles. The object of going up this brook is to shorten the Line by about two miles, instead of going round by Brook Village. There will be some rock, much of it loose and easily moved. There is a sandstone quarry of excellent building stone close by, which has been worked a little. Here is the highest point on the line, about 260 feet above the Sea, about the 17th mile.

From the Summit to the top of the descent to the mines at 29 miles.

18. From the Summit to Lake Ainslie about 6 miles, there will be a descent of about 30 feet and a rise of 15 feet in a distance of 2 miles and in the next 2 miles about 40ft. descent down Hay River valley. There will be little bank or cutting and only a few small culverts. At the 21st mile a deep cutting of about 30 ft. at its highest point, will be required to cross a projecting ridge. Beyond this, to where the Lake shore is reached at the 23rd mile, the line will be nearly level, and the work light. Round the shore of the Lake, in some places the bank is steep, necessitating some side cutting. The Line will be undulating a little, the gradients being about 20 feet to the mile, at a height of from 10 feet to 30 feet above the level of the Lake, as far as the 27th mile. Here is the crossing of Black River where the Survey for the Inverness & Richmond Railway reaches Lake Ainslie, at the 51st mile from Port Hawkesbury. A bridge of 50 feet opening or less, will be required here. The ground is meadow, overlying a deposit of soft mud, of from two feet to six feet in depth, below which appears to be hard sand. Black River is subject to overflow, and spreads over a considerable width during floods. There is only one stream of consequence near the 25th

mile which will require a small bridge. Except this, in the last four miles a few small culverts only are wanted. Following the shore northerly for $1\frac{1}{2}$ miles the north end of the Lake is reached. No work of consequence will be required over this portion. For another mile, by keeping at about 10 feet above the lake, the line will be level to the point where begins the descent to the Sea.

19. The distance to the Shore is about $4\frac{1}{4}$ miles. The height above the Sea, 200 feet. A descent of 180 feet is required. In order to obtain the easiest gradient, it is necessary to have a uniform one throughout the whole distance. As, however, it will be advisable to have a station about half way down, the gradient will be divided into two portions. This will give a descent of about 50 feet to the mile, with $\frac{1}{4}$ a mile of level between and $\frac{1}{4}$ mile at the foot. This is the best that can be done. To secure this it became necessary to follow the gorge which Big River has formed in the last two miles or so of its course. Over this portion, some sharp curves will have to be used and as the side-hill is, in some places, almost precipitous, rising above the bed of the river 150 feet to 200 feet, some heavy cutting will be necessary. The surface is covered with loose blocks of a coarse yellow sandstone, extremely friable. The indications are that deeper down it will be found harder, but, as in this case, it is likely to yield excellent building stone (some of the same stone being now quarried close by,) much of it may be utilised profitably. The bridge near the mouth of the river will be about 50 feet in span, and 20 feet above the water surface. Beyond this, to the sites of the shafts there will be very little work. A line was run and levelled over from the bridge site, up the small stream which joins Big River at its mouth, as far as the Post Road about $1\frac{1}{4}$ miles distant. This point is the same height as Lake Ainslie, and, if anything, farther away from it than the Mines are. The ascent would be nearly 140 feet to the mile. There appears to be no other practicable approach except by the gorge of Big River.

Descent to the Mines and description of approaches.

20. The heaviest works on the Line are as follows:—A cutting, 20 to 25 feet in greatest depth, and 1,000 feet long, near the head of Whycocomagh Bay; a bridge across Skye River 100 feet span, with flood openings; some rock cutting for about a quarter of a mile through McQuarrie's gorge; a cutting 30 feet deep at the top and sloping off to a base of 700 or 800 feet in length, at the 21st mile; side-hill work in the gorge of Big River for about two miles, of which half a mile may be nearly solid rock. It has been described where the few steep gradients are, and besides the other two bridges at Black River and Big River, which will not exceed spans of 50 feet each, the rest will be small bridges under 20 feet span, and small culverts. The soil is generally a light clay or clean gravel easily moved. There will be probably eight stations required at an average distance apart of from four to five miles. Also about twenty or twenty-five public road crossings.

Maximum works on the line are few.

Alternative line
crossing the Nar-
rows of Lake
Ainslee.

21. With reference to a possible extension to the north, and also, as an alternative line towards the mines, a line of soundings was taken across the Narrows of the Lake opposite 24½ miles. The Survey was made continuous and the east side of the Lake was followed, and the Line joined again with the one by the west side of the Lake at 29½ miles. Two sandy points run out a little way from the line of the shore on each side. They are not quite opposite each other. The width across from point to point is about ⅝ of a mile. The bottom gradually slopes down from each side to a depth of 14 or 15 feet. The deepest part is about 1,000 feet or less from east shore. The bottom is hard. There would be a saving in length to the Mines by this line of probably half a mile. The saving in distance to the north would be about 4½ miles, as compared with a line by Broad Cove Marsh.

EXTENSION TO CHETICAMP.

Exploration—
Cheticamp to S.
W. Margaree.

22. In company with yourself I examined the country from Cheticamp to the Broad Cove Mines, and also to the Outlet of Lake Ainslie, and along its north shore to Loch Ban. The distance from Cheticamp to Margaree Harbour is about 14 miles. A fine strip of country, about 1½ miles in width, lies between the foot of the range of hills (which are here from 1,200 to 1,300 feet above sea level) and the shore. The construction of this portion would not be expensive. From Margaree Harbour to Margaree Forks, a distance of about 8 miles, the line might be taken on either side of the river. The construction over this would be a little more expensive, chiefly from bridging the side streams and some side-hill work. If taken up the left, or west, bank a bridge would be required at the mouth of the river where the village of Margaree Harbour is. This would be necessary if a line is to be taken to Chimney Corner. At the Forks, according as one side or other of the main river is taken, either the South-west or the North-east branch will require to be crossed. From Margaree Forks to South-west Margaree, a distance of about five miles, there would be no difficulty of any kind, and the construction would probably be light.

S. W. Margaree
to Lake Ainslee.
Two alternative
routes.

23. It has been stated that between Broad Cove Mines and South-west Margaree, via Broad Cove Marsh, a distance of about 12 miles by the Post Road, the country was a difficult one for a railway line. In view of this I proposed an alternative line by the Outlet, if possible to cross the Lake at the Narrows. The result of my examination of these two routes leads me to the opinion that the "Marsh" route would prove very expensive and entail heavy gradients, as well as wide detours round the valleys and ridges. By the "Outlet" the four miles between that point and the Lake present no difficulty. To follow the river down, may involve one or two crossings of that stream, as it winds about from one side to the other of a wide meadow, and the banks, in places, are

high and precipitous. Except for this, the Line, which would be about seven miles to South-west Margaree, would be a very favourable one, with light work, and a descending gradient of, probably, from 12 to 15 feet to the mile, which is about the rate of declivity of the river. This route would be also more central, besides its greater directness to the North.

24. Cheticamp Harbour is about three miles long and from 1,000 feet to 1,500 feet wide, with deep water close along both sides. A bar exists at the mouth, but a channel has been dredged by Government and steamers enter without difficulty, and discharge and load at the wharf at "Eastern Harbour." The channel can easily be widened if necessary, as the bottom is said to consist of soft mud and sand. Cheticamp Island, which rises to a height of about 150 feet above the water along nearly its whole length, affords complete shelter to the harbour. At its south end, which is connected with the mainland by a wide gravel beach, is situated the fishery establishment of Charles Robins & Co., of Jersey, whose operations have been carried on there for more than 100 years. Here, vessels load, unload, and ride at anchor outside the harbour during the season of navigation, except in severe storms. Margaree Harbour has, ordinarily, not more than five to eight feet of water over the bar, and owing to the sluggish flow of the river for some distance above its mouth, and the exposed condition of the place to the Gulf storms, it is not likely that a good harbour can ever be made there for large vessels.

Cheticamp and
Margaree har-
bours.

COMPARISON OF ROUTES.

25. There being much difference of opinion with respect to the best route to adopt for a railway line to Northern Inverness, it will be necessary, in order to demonstrate which that is, to make a comparison, as far as that can be fairly done, between the two principal ones that have been proposed and surveyed recently, viz: the "Coast" line, from the Straits of Canso, via Port Hood, and the "Orangedale" line, from that station on the Cape Breton Railway, via Whycocomagh, both reaching Lake Ainslie, and extending on to Margaree and Cheticamp.

Necessity for
comparison of
two routes.

26. The reasons urged for the adoption of the Coast line were, mainly, two. The 1st., "that forty miles of it, from Port Hood coal mines to Chimney Corner coal mines, run along the best coal areas in Cape Breton;" the 2nd., "that it would relieve the Dominion Government of the responsibility of constructing piers and making artificial harbours, which, without the railway, are indispensably necessary to develop the vast resources of the County of Inverness."

Two main rea-
sons for the
coast line.

27. The line surveyed for this Railway, passed close to the Mine at Port Hood. It was not within seven miles of the Cape Mabou Coal Mine, the next Coal Area to the North, though an alternative line proposed, crossing the mouth of Mabou Harbour, may there bring it within

The Surry failed
to reach three
out of the four
coal fields.

three miles, from which it may be possible to build a branch to the Mine. The Broad Cove Coal Field, by far the most important of the four Areas, was passed by on the Survey at a distance of one and one-fourth miles, and at an elevation of 200 feet above the Sea, close by which they are situated. No attempt was made to reach them, either by a practicable approach or otherwise. The Survey terminated at the north side of Margaree Harbour. To reach Chimney Corner Coal Mine, the harbour would have to be crossed at its mouth, and a line carried along the Sea-shore in a southerly direction for a distance of about five and a half miles. How practicable or costly this may be, is not known. It would appear, therefore, that to reach three out of the four Coal Areas, "run along through 40 miles" by this Survey Line, it will require three branches of the respective lengths of 7 or 3, 3, and 5½ miles, for which no surveys have been made, to ascertain if it is practicable to reach each coal field, *which was the ostensible object of the Survey.*

Engineering requirements on coast line.

28. As regards the engineering difficulties on the line surveyed:— Between Port Hawkesbury and Port Hastings, four miles, two trestle bridges are required, estimated at 1,000 feet and 800 feet respectively. Between Port Hastings and Port Hood, 30 miles, much protection from the sea, and a bridge of 100 feet span across Judique river. Between Port Hood and Lake Ainslie, 17 miles, two bridges of 100 feet and 150 feet respectively. The country here appears so unfavourable, that an alternative line, which will probably be from two to three miles longer, has been proposed, though not surveyed. Beyond Lake Ainslie, via Broad Cove Marsh, over a length of at least 12 miles, the work and gradients are likely to be very heavy.

Position of the coast line.

29. With respect to the position it will occupy, relatively to the country which it is designed to serve, it runs for 35 and perhaps 40 miles, along the Gulf coast, with far more than half the distance, the range of the Craignish Hills, rising immediately above it to a height of 700 or 800 feet above the sea and separating it from the best part of the south of the county. From Port Hood or Mabou to Lake Ainslie, though for the most part through a good agricultural country, the Line is too far west to be centrally situated, and it therefore leaves the East unprovided with railway facilities. From Lake Ainslie, via Broad Cove marsh, to South-west Margaree, it will not be in as central a position as a line following the river from the outlet of the lake. Beyond this point, the nature and requirements of the country, and the object of reaching Cheticamp, leave no room for further alternative proposals.

Object and light character of work on the "Orangedale" line.

30. The line from Orangedale to Broad Cove presents no difficulties of any kind in an engineering way, except, perhaps, some rock and side-hill work in the last two miles of the approach to the mines. It is designed to go to these mines; the survey was directed to that end;

and was completed to them. Were there no other Coal Areas in the County, the Broad Cove Field alone, would warrant a railway being built to open it up, at least when this can be done cheaply and in 34 miles. The amount of work throughout is exceptionally light, especially in a country like Cape Breton.

31. This Line will be situated in the very centre of the country. Its central position. It occupies the route travelled to the South and East, by the people of the North. Every mile of it passes through a farming country, and easy access can be obtained at all points, from any part of the country on each side. It touches Lake Ainslie where it is navigable, which the other line does not, thus bringing the country surrounding this magnificent sheet of water, within easy reach of the railway, and if it should be found an advantage to cross the Narrows of the Lake to reach Broad Cove Mines, it affords the most direct line, by four or five miles, to Margaree and Cheticamp, as well as the most favourable in gradients along the Lake to the Outlet, and descending thence with the river.

GENERAL REMARKS.

32. Having described and compared, more or less fully, the two Reasons for submitting opinions routes for railways designed to open up this part of Cape Breton, I will now submit to you my views with reference to their merits, and capabilities of promoting its ultimate prosperity. My knowledge of the topographical features, and of the requirements and resources of the Island, gained from two seasons' travelling, exploring and surveying for possible railway routes over a great part of it, may, perhaps, give my opinions some weight.

33. One of the principal arguments urged for the adoption of the Necessity of the "Central" route for the Cape Breton railway. "Central Route" (via the Grand Narrows, for the Cape Breton Railway) in 1885 when I was engaged in the exploratory survey for that route was, that it would, in the first place, supply direct railway communication to the southern part of Inverness, and, in the second place, make it possible to extend by way of Whycocomagh, to the northern part of the county, which, in addition to its containing the finest and most extensive agricultural districts in the Island, possessed Coal Fields at Broad Cove, to open up which would insure the immediate future development of the country.

34. No where else can a branch line to the North be built. To the The only route for branch to the north. east of Whycocomagh stretch the waters of the Bras D'Or, and to the west, extends the range of the Craguish Hills as far as the Straits of Canso. From this Mr. Tremaine's Survey it became known that, between the Mines and Whycocomagh, the route presented no difficulties. Therefore, when the route for the Cape Breton Railway was fixed upon, the construction of such a short and easy line to the Mines, to open them up, became feasible.

The scope of the coast line project.

35. It was soon after this that the project for the "Coast" line took shape, by the formation of a Company, and the prosecution of an Instrumental Survey. It was somewhat extensive, for, besides making Cariboo Cove one Terminus, it was to be extended to the North as far as Cheticamp, a total distance of about 100 miles. Though both these Termini could be reached just as easily by utilizing about 26 miles of the Cape Breton Railway, it would appear that it was designed to make the railway independent of, if not a competing one to, the Government line. The only advantage it might be said to have over the other route, was that it reached the Port Hood Coal Mine, a very unpromising enterprise, and supplied the accommodation of a railway, along 35 miles of coast to a narrow strip of country. On the other hand unless the Company built its so-called "Whycocomagh Branch," which has been put entirely in the back-ground, no outlet to the east of the Island was provided. The Charter requires that a connection shall be made with the Cape Breton Railway at Hawkesbury. Owing to the costly nature of this part of the line as far as Port Hastings, the Company which has begun construction evidently does not intend to undertake it. The two trestle-bridges here are estimated to cost \$10 a foot run. To be built of steel they would probably cost five times as much. Should this connection not be made, *the Charter would be forfeited*. For the "branch" the Charter does not appear to provide for a connection with the Cape Breton Railway south of Whycocomagh.

The proper railway system for the Island.

36. The Island of Cape Breton, though rich in mineral resources, and possessing a large area of excellent soil is, owing to its hilly nature, not capable of very rapid development. From its insular position and deeply indented coast, whatever railways are built must necessarily be local. The exception to this is the line of the Cape Breton Railway, which, from its position through the centre of the Island, will form not only its Main Line, but become part of the great trunk system of the Dominion. In view of these conditions, and the costly nature of the work, the Dominion Government alone, could properly undertake its construction. The traffic is not likely to be very remunerative for some years. Therefore, when the remainder of the Island can be fairly reached by railways which will form branch lines and feeders to the main line, these are the first that should be undertaken, *especially if they are easy to construct, and will best supply the wants of the country as well*.

Comparative mileages on both lines.

37. The "Orangedale" line will reach the Broad Cove Coal Mines in 33 or 34 miles. The length required to be built by the "Coast" line to the same point will be from 57 to 60 miles. The cost of the former, per mile, is likely to be far below that of the latter. The distance from Port Hawkesbury to Cheticamp via the "Coast" line has been variously stated at 100, and at 94 miles. Taking the latter figure, and adding three miles for a branch to the Broad Cove Mines,

and 27 miles from Black River to Orangedale, the total mileage will be about 124 miles. *To accomplish practically as much, the "Orangedale" line will only involve the construction of 71 miles, a difference of 53 miles, which would be a saving, at \$20,000 a mile, of more than one million dollars.* Adding 29 miles, being the distance from Orangedale to Point Tupper, by the Cape Breton Railway the comparative distances will be, approximately :—

From.	To.	By Coast Line.	By Orangedale Line.
Point Tupper.	B'd Cove Mines.	57 to 60.	63
"	Cheticamp.	94 to 100.	93

Without the "Whycocomagh Branch," which might be extended to Orangedale, seven or eight miles farther, that station could not be reached by railway from Black River, under 80 miles, as against 27 direct, or a round of 53 miles. It is clear, therefore, that in this event there will be no traffic from the North, destined for the East, over the Cape Breton Railway, except what may be conveyed by horse power to Orangedale.

38. It is assumed that the Inverness & Richmond Railway Co. will build this Branch. The Company has not surveyed it yet; there is no provision for it in the Municipal Resolution granting the Bonus, and as there is about 100 miles of "main line" of a more expensive character to build, the prospects for the "branch" are not very good. Should it be built—and it is clearly wanted first—it would be found to fully accommodate the country as far as it may be built to the North—Broad Cove and beyond—and the Coast line would be found of very little use. The necessity of communication with the East cannot be disputed. It has been the burden of the cry of the people for years. It is the subject lately of more than one editorial in the principal paper in Cape Breton, proving it. It is the lately expressed opinion of a gentleman occupying an important position in that part of Cape Breton, that the Island could not compete in the Halifax market, with agricultural produce, against Western Nova Scotia. For its surplus produce, the eastern part of the Island and Newfoundland will be its principal markets. The "Orangedale" line, however, gives an outlet each way—to the West as good as the "Coast" line.

The importance of the "Orangedale" line as an outlet to the east as well as the west.

39. It would appear a reasonable conclusion to arrive at, that to begin the construction of a railway of about 100 miles in length, with so many difficulties ahead, and so many important points undecided, is imprudent, not to say reckless. A round sum per mile, viz. \$40,000 was given as the estimate, "without information as to the data upon which such estimate has been formed." The figure has been considered "incredible." It has since been put down at \$20,000, without any data also, whilst "another estimate, different from the other two, was provided for the Inverness & Richmond Railway Co." The Presi-

The uncertain condition of the coast line project under the operation of two companies.

dent of this Company, under whose personal direction and supervision the Survey was made, and who, though not an engineer, is believed to be an experienced railway man, has characterized "the representations of the Engineer as ridiculous," and remarks that \$20,000 a mile would build and stock the line. This system of "guessing" may do for an Exploratory Survey, but is scarcely commensurate with the cost of an Instrumental one. The President above referred to, who represents the original Company, and who made the Survey, has been "ruled out," and the new Corporation has located and broken ground over about 15 miles, but has made no further surveys. It, however, secured on conditions, the \$100,000 County Bonus for a line from Port Hastings to Broad Cove and possibly Cheticamp.

Tapping the island business at the expense of the Government railway.

40. In fact the whole project seems to be in a very incomplete and uncertain state, and those who advocate its construction are chiefly politicians having little knowledge of the difficulties and cost of railway construction. With this Line built, none of the traffic of Northern Cape Breton will pass over the line of the Cape Breton Railway, except what must go to the East, in spite of having to "foot" it for 27 miles. It scarcely justifies the great expenditure incurred for this magnificent railway, if the bulk of the business of the Island, to open up which alone it was built, is to be filched away from it in this manner.

I am, Sir,

Yours faithfully,

P K. HYNDMAN,

Engineer.

Orangedale to Broad Cove and Cheticamp Railway Survey.

